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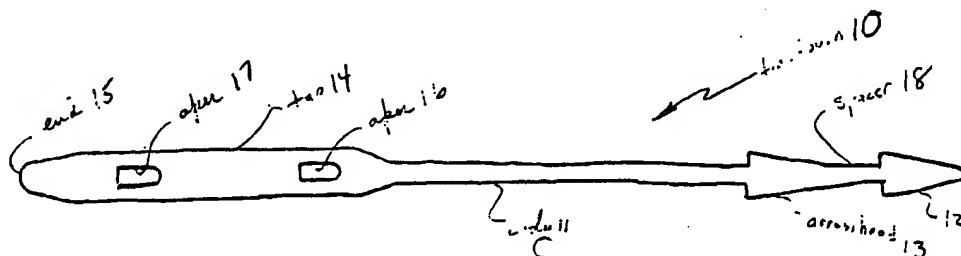
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(54) Title: TIE-DOWN APPARATUS FOR PRODUCT



(57) Abstract: A tie-down apparatus includes a flat ribbon-like flexible tie-down (10) having an elongated body (11) supporting a pair of arrowheads (12, 13) separated by a spacer (18) at one end and supporting an elongated tab (14) having a generally rounded end and a pair of spaced apart apertures (16, 17) at the remaining end. In an alternate embodiment, the tie-down includes an elongated body having a single arrowhead (22) at one end and a sing tab (23) defining a single aperture (25) at the remaining end. The tie-down devices form one or more loops to secure a product such as a doll (30) within a package against a rear panel (50) having spaced apart apertures (51, 52) therein by encircling the doll product (30) and passing the tab and arrowhead ends through the spaced apart apertures and securing the attachment by passing an arrowhead through an aperture. In one embodiment, a dual loop attachment while in the alternate embodiment, a single loop attachment is formed.

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## TIE-DOWN APPARATUS FOR PRODUCT

## SPECIFICATION

5

Field of the Invention

10 This invention relates generally to product apparatus for packaging commercial products and particularly to devices used in securing such products within their respective packaging.

Background of the Invention

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20 One of the more challenging aspects of packaging consumer products such as toy products is found in the devices used to secure the products within their respective packages. Many products such as dolls or the like must be securely attached to their surrounding package elements in a manner directed toward achieving several simultaneous and often conflicting goals. The goals of such packaging include providing attractive presentation of the product to consumers, securely maintaining the product within its package to resist vibrations and impacts occurred during shipment, providing easy removal of the product from the package by the consumer and maintaining the cost associated with such product security at a reasonably commercial acceptable level.

The typical package used on products such as dolls or the like utilizes a large box sufficient in volume to enclose the doll product and usually

fabricated of cardboard or particle board material. Often such doll packages include a clear transparent front panel to facilitate viewing of the product and the package interior. The package includes a rear  
5 panel having a plurality of apertures formed therein together with a plurality of flexible wire ties which encircle portions of the doll body and pass through the apertures in the rear panel. The wire tires are then twisted for secure attachment and tightening on  
10 the backside of the rear panel.

While typical wire tires securely maintain the doll product or the like during transit and meet the varied requirements of packaging strength and  
15 security, they have also proven to be of great annoyance to consumers. Almost without exception, consumers complain about the extensive effort required to loosen each of the wire ties in order to remove the product from the package rear panel. However, such  
20 wire tires continue to be widely used because a reasonable alternative which simultaneously meets all the varied requirements such as those set forth above has heretofore been illusive.

25 In related arts, other tie-down devices have been developed using a variety of structures. For example, U.S. Patent 4,510,649 issued to Yudis et al. sets forth a TIE STRIP having in elongated flexible ribbon-like body defining a plurality of raised portions  
30 thereon. One end of the body is pointed while the remaining end is enlarged and defines a slot sufficient in size to receive the ribbon-like elongated body. The pointed end is passed through the slot and drawn therethrough such that the raised

portions engage the slot edge to maintain a secure tie.

U.S. Patent 4,477,950 issued to Sisek et al. sets forth a CLOSURE having an elongated ribbon-like body defining a pointed end and an enlarged end. The enlarged end defines an aperture having a lock tab formed therein. The ribbon-like body defines a plurality of locking projections extending outwardly therefrom. The pointed end is passed through the slot such that the projections extend outwardly beyond the slot and secure the tie.

U.S. Patent 4,403,375 issued to Blum set forth an TYING DEVICE having an elongated ribbon-like body supporting a pointed end and an enlarged end. The enlarged end defines a rectangular aperture in which the pointed body may be passed. The elongated portion further defines outwardly extending elements for securing the tie in the slot.

U.S. Patent 4,466,159 issued to Burrage sets forth an ADJUSTABLE TIE STRAP having an elongated plastic body defining a plurality of rectangular apertures therein and a plurality of notches between the apertures.

U.S. Patent 5,396,684 issued to Yocom sets forth an ELECTRICAL UTENSIL CORD-ANCHORING DEVICE having an elongated body defining a pointed end and an enlarged end. The enlarged end defines a slot while the elongated body defines a plurality of outwardly extending projections and a longitudinal slot.

U.S. Patent 6,073,315 issued to Rasmussen set forth a LOOP FASTENER having an elongated body defining points at its opposed ends. The body further defines a plurality of apertures having slots  
5 extending between adjacent aperture pairs.

U.S. Patent 5,685,048 issued to Benoit set forth a MERCHANDISE PAIRING TIE having a rectangular housing defining a rectangular aperture therethrough  
10 joined to an elongated ribbon-like body. The ribbon-like body defines a plurality of apertures and an orthogonal tab. A pointed end is formed on the opposite end of the ribbon-like body from the rectangular housing.

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U.S. Patent 3,255,501 issued to Lagurre set forth a RESILIENT STRAP FASTENER having an elongated generally rectangular end portion defining a pair of apertures therein joined to an elongated somewhat  
20 thinner ribbon-like portion having a plurality of arrowhead points supported thereon.

U.S. Patent 2,361,506 issued to Smith and U.S. Patent 5,651,376 issued the Thompson set forth  
25 additional examples of strap-type tying devices.

U.S. Patent 4,676,535 issued to Mautner sets forth a SECURITY SEAL FOR USE IN A COIN BAG OR THE LIKE having a plurality of ratchet teeth receivable  
30 within a locking shackle.

U.S. Patent Des.265,175 issued to Lloyd sets forth a STRAP FASTENER FOR SKI EQUIPMENT OR SIMILAR ARTICLE having an elongated ribbon-like body defining

opposed pointed ends. The ribbon-like body defines a plurality of apertures and a plurality of inwardly extending triangular lock notches. The ribbon-like body is capable of forming a first loop for encircling one article and reversing each end to again interlock and form a second loop for locking an additional article.

U.S. Patent Des.252,741 issued to Taylor and U.S. Patent Des.319,559 issued to Weiss set forth designs for still further variations of tying devices.

While the foregoing described prior art devices have in some instances generally improved the tie down arts, an economical, easy to use and sufficiently secure tie down suitable for use in packaging products such as dolls and the like has thus far been unavailable.

#### Summary of the Invention

Accordingly, it is a general object of the present invention to provide an improved tie-down device suitable for use in products such as dolls or the like. It is a more particular object of the present invention to provide an improved tie-down device suitable for use in doll products or the like which is economical, easy to use and relatively easy to remove while simultaneously providing secure product attachment.

In accordance with the present invention there is provided a tie-down apparatus for securing an item within a package, the tie-down apparatus comprising: a

tie-down device having an elongated body, first and second arrowhead portions separated by a spacer at one end of the elongated body and a tab defining first and second spaced apart apertures therein at the remaining end thereof; and a package portion having third and fourth spaced apart apertures formed therein, the tie-down device being fabricated of a flexible material and constructed to form a first loop about a portion of an item by wrapping the body upon a portion of the item and passing the first and second arrowheads and the spacer through the first aperture and to form a second loop by placing the tab and the second arrowhead through the third and fourth apertures and thereafter passing the first arrowhead through the second aperture.

#### Brief Description of the Drawings

The features of the present invention, which are believed to be novel, are set forth with particularity in the appended claims. The invention, together with further objects and advantages thereof, may best be understood by reference to the following description taken in conjunction with the accompanying drawings, in the several figures of which like reference numerals identify like elements and in which:

Figure 1 sets forth a top view of a tie-down constructed in accordance with the present invention in its flattened configuration;

Figure 2 sets forth a top view of an alternate embodiment of the present invention tie-down in its flattened configuration;

Figure 3 sets forth a rear view of the present invention tie-down initially secured to the waist of a typical doll;

5

Figure 4 sets forth a rear view of the present invention tie-down securing the doll waist of Figure 3 to a package sheet;

10 Figure 5 sets forth a section view of the present invention tie-down taken along section lines 5-5 in Figure 4;

15 Figure 6 sets forth a rear view of a doll body initially secured by a tie-down constructed in accordance with the present invention;

20 Figure 7 sets forth a partial perspective view of the present invention tie-down during the unfastening of the tie-down attachment.

#### Description of the Preferred Embodiments

25 Figure 1 sets forth a top view of a tie-down device constructed in accordance with the present invention and generally referenced by numeral 10. Tie-down 10 is configured to provide the double loop attachment method within the present invention system. Tie-down 10 is shown in Figure 1 in its flattened or  
30 extending configuration and is preferably formed of a thin flexible plastic material such as a soft-grade polyvinylchloride (PVC). The reason for preferably fabricating the present invention tie-down device from a soft grade polyvinylchloride or its equivalent is



set forth below in Figure 7 in greater detail.

However, suffice it to note here that it has been found that a soft-grade flexible material such as soft-grade polyvinylchloride resists tearing under stress and additionally, provides easy removal of the tie-down device while still retaining sufficient strength when subjected to tension to hold the doll or other product within its package.

More specifically, tie-down device 10 includes an elongated ribbon-like body 11 supporting a pair of arrowheads 12 and 13. A small spacer portion 18 extends between arrowheads 12 and 13. At the opposite end of body 11, tie-down device 10 includes an elongated generally wider tab portion 14 having a pair of spaced apart apertures 16 and 17 and a slightly rounded end 15 formed therein. In the preferred fabrication of the present invention, tie-down device 10 is formed of a thin flexible material having generally uniform thickness throughout the length of tie-down device 10.

Figure 2 sets forth a top view of an alternate embodiment of the present invention tie-down device generally referenced by numeral 20. Tie-down 20 is also shown in its flattened configuration and is also preferably formed of a soft-grade flexible material such as soft-grade PVC or its equivalent. Tie-down 20 is a single loop embodiment of the present invention and includes an elongated body 21 supporting an arrowhead 22 at one end and a tab 23 at the opposite end. Tab 23 defines an aperture 25 and a rounded end 24.

In operation and as is set forth below in greater detail, tie-down devices 10 and 20 function in a similar manner in that a loop is formed about the to-be-secured product by curving the body portion of the tie-down into a loop and passing an arrowhead through an aperture. In both tie-down 10 and tie-down 20 the size of the arrowheads and apertures is selected to allow the arrowhead once passed through the aperture to securely resist being withdrawn therefrom with tension.

Figure 3 sets forth a rear view of a conventional doll generally referenced by numeral 30 of the type to be which the present invention tie-down device is most likely directed. Doll 30 is fabricated having a doll body 31 defining a narrowed waist 32, hips 33 and 34 and a lower torso 35. The narrow shape of doll body 31 at waist 32 forms a convenient location for securing a tie-down device such as tie-down 10 constructed in accordance with the present invention.

As described above, tie-down 10 includes a body 11 supporting a pair of arrowheads 12 and 13 separated by a spacer 18. Body 11 further supports a tab 14 defining apertures 16 and 17 therein together with a generally rounded end 15.

In Figure 3, tie-down 10 is shown having formed the initial loop of the present invention tie-down apparatus in which body 11 is generally wrapped about waist 32 and in which arrowheads 12 and 13 have been passed through aperture 16. The expansion of arrowhead 13 beyond the width of aperture 16 allows tie-down 10 to securely encircle waist 32 of doll 30.

At this point, the first of the two loops used in the present invention tie-down apparatus has been formed encircling waist 32. Also at this point, the free ends of tie-down 10 formed by spacer 18 and arrowhead 12 at one side and the remainder of tab 14 and end 15 on the other side are free to provide the second loop in the present invention tie-down apparatus. Thus, tie-down 10 has provided a secure attachment to waist 32 of doll 30 in preparation for completion of the attachment of doll 30 to the rear panel of its packaging in the manner shown in Figure 4.

Figure 4 sets forth a partial rear view of tie-down 10 having completed the attachment of doll 30 to a rear panel 50. Rear panel 50 is typical of the rear panel utilized in conventional doll product packaging and is generally formed of a material such as cardboard or particleboard. Rear panel 50 defines a pair of slots 51 and 52 which are spaced apart at a distance appropriate for the attachment of doll 30. Generally speaking, the spacing of slots 51 and 52 is selected to correspond generally to the width of doll 30 at the region occupied by waist 32.

More specifically, doll 30 includes a body 31 defining a waist portion 32 together with hips 33 and 34 and a lower torso 35.

In accordance with the present invention, tie-down 10 includes a tab 14 having a rounded end 15 and an aperture 17 formed therein. Tie-down 10 further includes arrowheads 12 and 13 separated by a spacer portion 18.

In the attachment shown in Figure 4, the combination of doll 30 and tie-down 10 achieved in the manner illustrated above in Figure 3, is positioned against rear panel 50 such that the free portion of tab 14 and end 15 may be passed through slot 52 while the free portion of arrowheads 12 and 13 as well as spacer 18 may be passed through slot 51. Thereafter, tab 14 is folded inwardly while arrowhead 12 is forced through aperture 17 and a tension is applied to arrowhead 12 and end 15 of tab 14 outwardly in the directions indicated by arrows 26 and 27. Once the entire structure of arrowhead 12 has passed through aperture 17, the attachment of tie-down 10 to rear panel 50 is complete. The extended dimension of arrowhead 12 beyond the width of aperture 17 allows arrowhead 12 to resist tensional forces in the direction indicated by arrows 26 and 27. The removal of tie-down 10 is carried forward in the manner shown below in Figure 7. However, suffice it to note here that in contrast to the prior art wire ties frequently employed to secure products such as doll 30, tie-down 10 is easily removed by simply grasping end 15 and drawing it upwardly away from rear panel 50 and rolling it in the direction in which arrowhead 12 points. Once end 15 and tab 14 have been withdrawn from arrowhead 12, tie-down 10 assumes the attachment shown above in Figure 3 and a repeat of the same operation grasping tab 14 and pulling it against arrowhead 13 in the direction toward which arrowhead 12 points allows the loosening of tie-down 10. Thereafter, tab 14 is further pulled against arrowhead 12 to produce a similar removal. The soft-grade material used in the present invention tie-down facilitates this easy removal while simultaneously

providing a strong tension-resisting attachment for the present invention tie-down device.

Figure 5 sets forth a section view of the present invention tie-down apparatus taken along section lines 5-5 in Figure 4. As described above, a rear panel 50 defines a pair of spaced apart slots 51 and 52 and is preferably formed of a material such as cardboard or particleboard. As is also described above, a tie-down 10 includes a body 11 generally encircling a doll waist 32. Tie-down 10 further includes a tab 14 having an aperture 16 formed therein. Tie-down 10 further includes an aperture 17 and a rounded end 15 together with a pair of spaced apart arrowheads 12 and 13 having a spacer 18 therebetween. In the attachment shown in Figure 5, arrowhead 13 is passed through aperture 16 to provide the initial attachment set forth above in Figure 3. Thereafter, the remainder of tab 14 is passed through slot 52 of rear panel 50 while the remainder of arrowhead 13 and spacer 18 are passed through slot 51 of rear panel 50. The present invention attachment is completed as tab 14 is folded against rear panel 50 and as arrowhead 12 is passed through aperture 17 until the configuration shown in Figure 4 has been achieved. The resulting attachment is easily carried forward and represents a substantial saving in material and labor above that realized by the prior art wire tie apparatus. The attachment of doll waist 32 is secure as arrowheads 12 and 13 cooperate with apertures 16 and 17 respectively of tie-down device 10 to maintain an attachment to rear panel 50.

Figure 6 sets forth an alternative method of utilizing the present invention tie-down apparatus in those situations in which wrapping the initial loop about the doll exterior would prove aesthetically undesirable. In the configuration shown in Figure 6, doll 30 is shown wearing a garment 36. Thus, in the situation in which wrapping the first loop of tie-down 10 about garment 36 is undesirable, the method of use shown in Figure 6 allows tie-down 10 to be initially looped about the doll body underneath garment 36.

More specifically, tie-down 10 includes a tab 14 defining apertures 16 and 17 and a generally rounded end 15. Tie-down 10 further defines a body 11 (not shown) supporting a pair of arrowheads 12 and 13 and a spacer 18.

Garment 36 defines a rear seam 37 which is provided with conventional closures such as snap-fasteners or hook-and-loop fabric attachment pads (not shown) which are typically utilized in doll garments. In the method of attachment shown in Figure 6, seam 37 is partially opened to form an opening 38 near the waist of doll 30. In further accordance with the present invention method, tie-down 10 is secured about the waist of doll 30 in the manner shown in Figure 3 with the additional consideration that the free ends formed by arrowheads 12 and 13 together with spacer 18 and tab 14 are passed outwardly through opening 38 of seam 37. Thereafter, the second loop providing attachment of the present invention tie-down apparatus utilized in securing doll 30 to the rear panel of a package is carried forward in the identical manner to that set forth above in Figure 4. Thus, the

descriptions of the use of the present invention tie-down device set forth above in Figures 3, 4 and 5 apply equally well to the method used in Figure 6, with the sole difference being the operation of tie-down device 10 through opening 38 beneath garment 36. In this manner, the present invention tie-down apparatus may be utilized to provide a secure yet easy to remove attachment for doll 30.

Figure 7 sets forth a perspective view of tab 14 and arrowhead 12 during the removal process mentioned above. It will be noted that the structure provided by tab 14 and arrowhead 12 of tie-down device 10 is substantially identical to the structure provided by arrowhead 22 and tab 23 set forth of tie-down device 20 set forth above in Figure 2. Thus, the use of tie-down device 20 in a single loop attachment is operative in a similar manner to tie-down device 10 utilized in a dual loop attachment. Particularly the removal operation shown in Figure 7 will be understood to apply equally well to separation of tie-down device 20.

More specifically, tie-down device 10 includes a tab 14 having a generally rounded end 15 and defining an aperture 17. Tie-down device 10 further includes a spacer 18 supporting an arrowhead 12.

In the configuration shown in Figure 7, the user has initiated the above mentioned removal or separation of tie-down device 10 which seeks to separate arrowhead 12 from aperture 17. With temporary reference to Figure 4, it will be noted that arrowhead 12 is securely attached within aperture 14

due to the extended size of arrowhead 12 relative to aperture 17.

Returning to Figure 7, the initial step shown  
5 therein involves the user grasping end 15 and pulling  
it upwardly and laterally in the direction in which  
arrowhead 12 points. This direction of pull is  
generally illustrated by arrowhead 40. As end 15 of  
tab 14 is pulled in the direction indicated by  
10 arrowhead 40, the portion of tab 14 surrounding  
aperture 17 is urged upwardly in the direction  
indicated by arrow 43. This upward movement causes  
the side portions of arrowhead 12 to be bent upwardly  
and inwardly within aperture 17 in the directions  
15 indicated by arrows 41 and 42. As end 15 of tab 14  
continues to be drawn upwardly, the soft-grade  
material of tie-down device 10 allows arrowhead 12 to  
easily fold to a sufficiently small dimension that  
aperture 17 of tab 14 may be passed over and upwardly  
20 from the now folded configuration of arrowhead 12.

This ability to easily withdraw tab 14 from an  
arrowhead within one of its apertures is also easily  
performed with respect to the attachment of arrowhead  
25 13 within aperture 16 in the initial loop shown in  
Figure 3. Thus, the present invention tie-down device  
is secure in resisting tension forces which would  
otherwise cause doll 30 to be separated from its  
packaging while simultaneously being easily removable  
30 due to the fabrication thereof using a soft-grade  
material such as soft-grade PVC or the like.

While particular embodiments of the invention  
have been shown and described, it will be obvious to



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those skilled in the art that changes and  
modifications may be made without departing from the  
invention in its broader aspects. Therefore, the aim  
in the appended claims is to cover all such changes  
5 and modifications as fall within the true spirit and  
scope of the invention.

10

THAT WHICH IS CLAIMED IS:

1. A tie-down apparatus for securing an item within a package, said tie-down apparatus comprising:

a tie-down device having an elongated body, first and second arrowhead portions separated by a spacer at one end of said elongated body and a tab defining first and second spaced apart apertures therein at the remaining end thereof; and

a package portion having third and fourth spaced apart apertures formed therein,

said tie-down device being fabricated of a flexible material and constructed to form a first loop about a portion of an item by wrapping said body upon a portion of said item and passing said first and second arrowheads and said spacer through said first aperture and to form a second loop by placing said tab and said second arrowhead through said third and fourth apertures and thereafter passing said first arrowhead through said second aperture.

2. The tie-down apparatus set forth in claim 1 wherein said tie-down device is formed of a soft grade polyvinylchloride material.

3. The tie-down apparatus set forth in claim 2 wherein said spacer is shaped in correspondence to said elongated body.

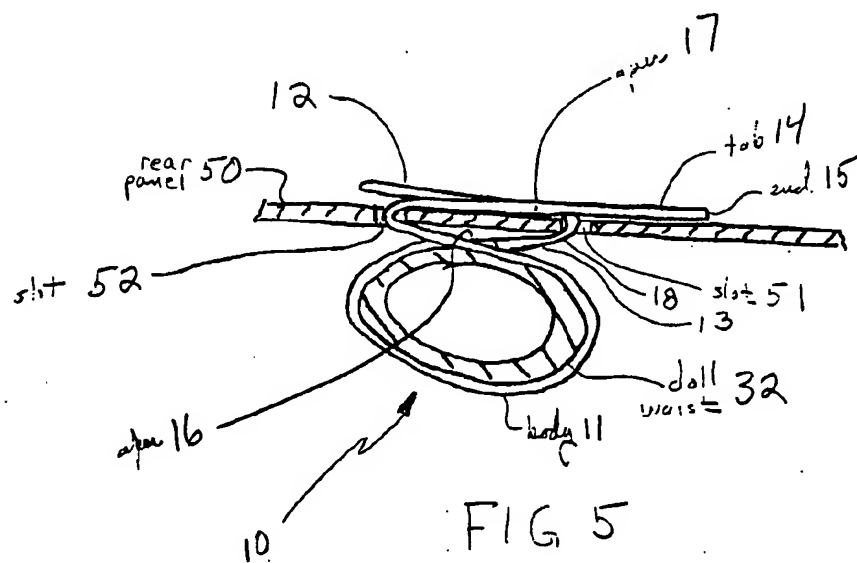
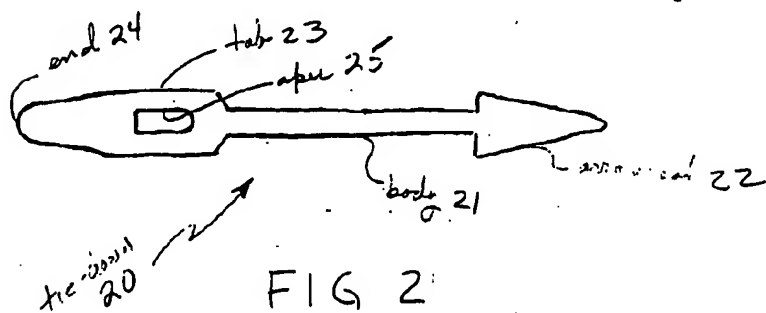
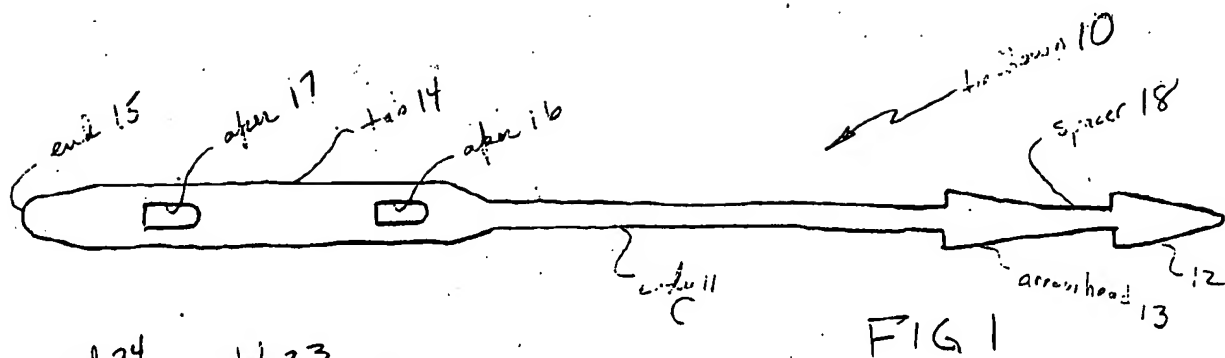
4. The tie-down apparatus set forth in claim 3 wherein said first and second apertures form elongated slots.

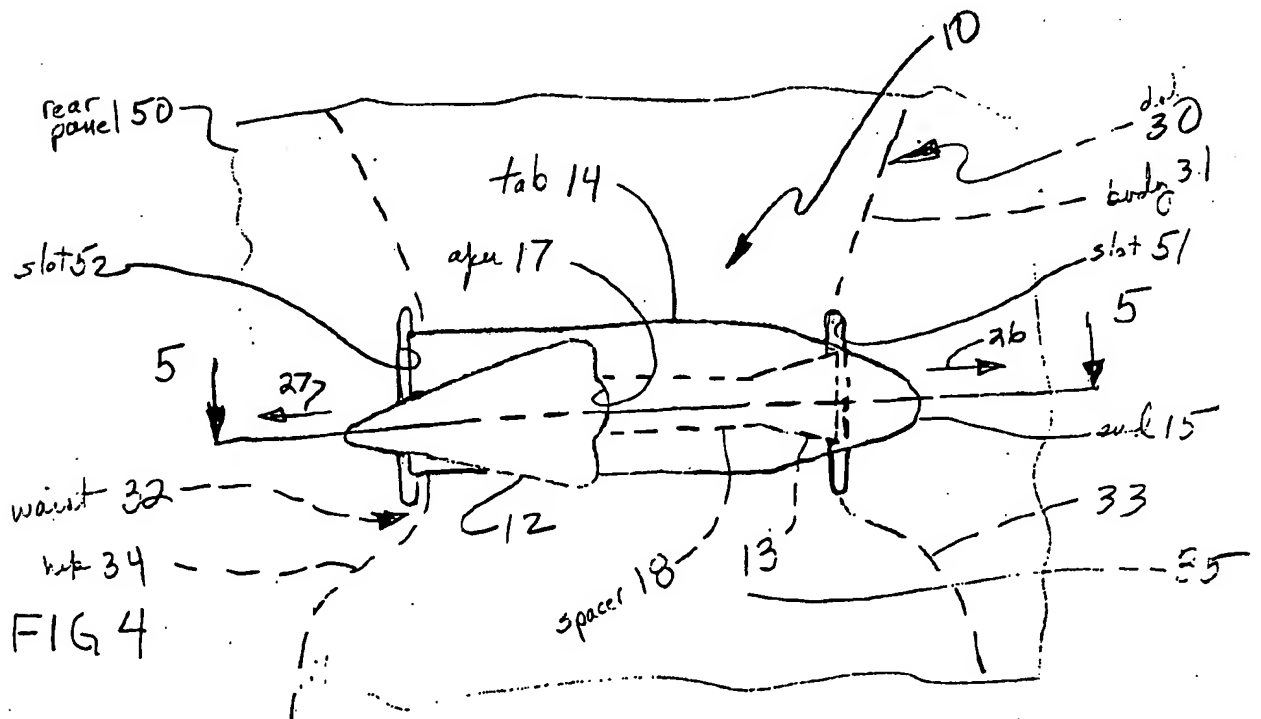
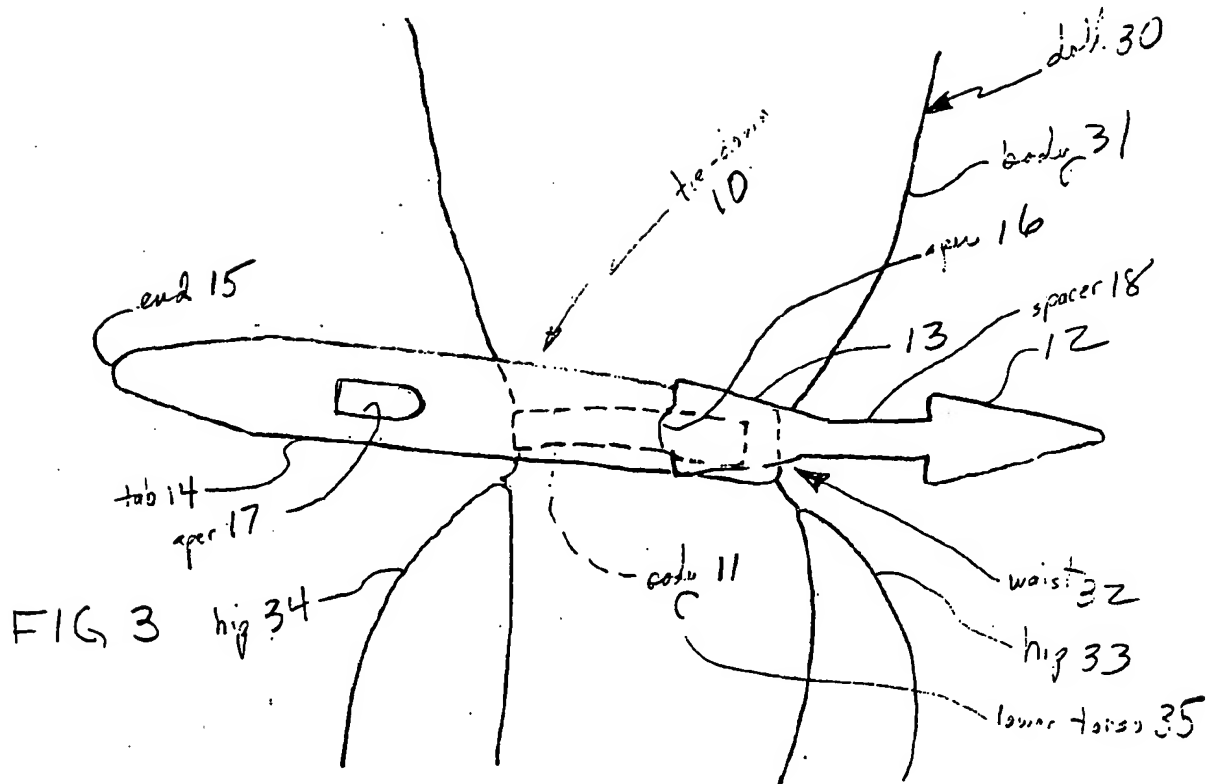
5. A tie-down apparatus for securing an item within a package, said tie-down apparatus comprising:

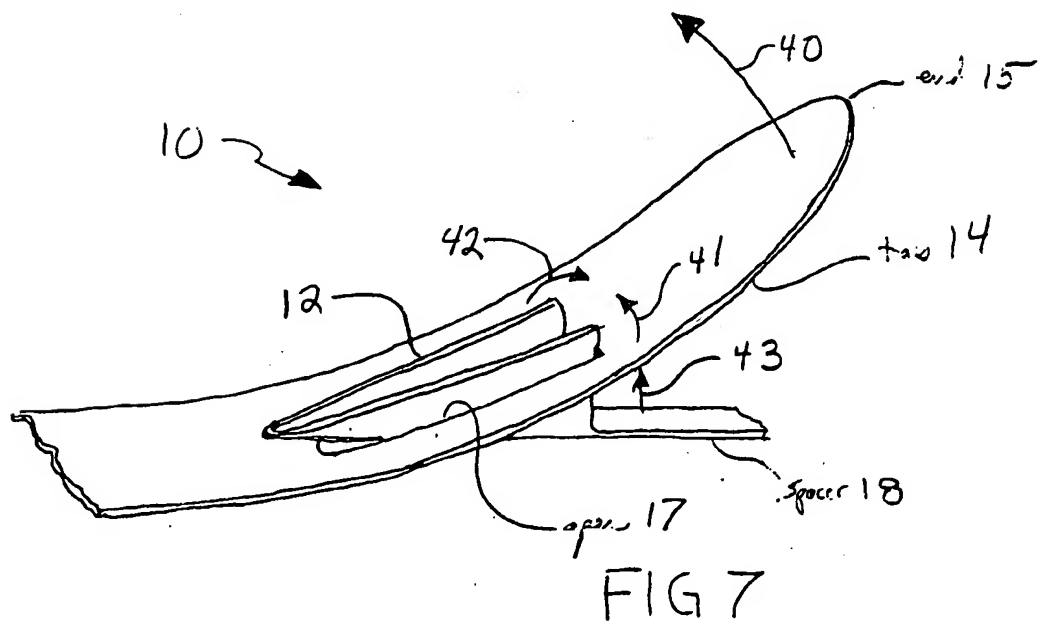
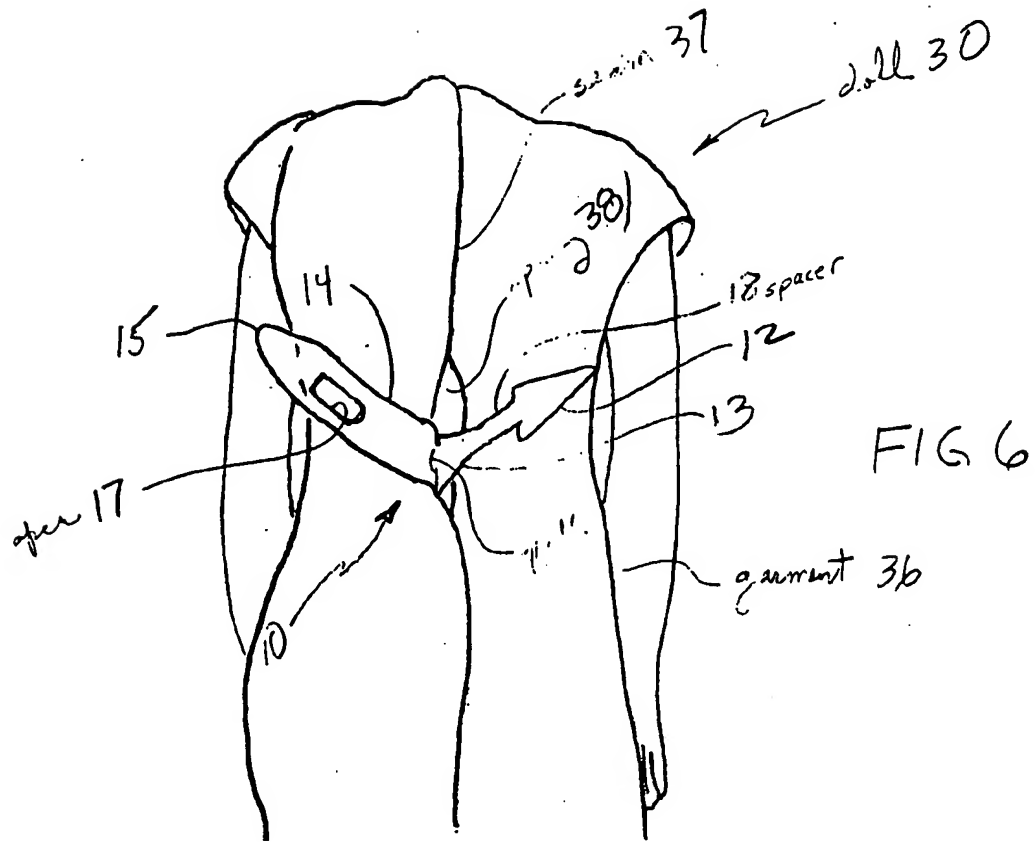
a tie-down device having an elongated body, a first arrowhead portion and a tab portion defining a first aperture therein, said tie-down device being formed of a flexible soft material; and

a package portion having second and third apertures formed therein,

said tie-down device being constructed to secure an item to said package portion by passing said body against a portion of an item and by passing said arrowhead and tab portions through said second and third apertures and to pass said arrowhead through said first aperture.







## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/01629

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : B65D 63/00

US CL : 24/16PB

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 24/16PB, 30.5P, 17AP, 16R, 30.5R; 206/478.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3,874,034 A (CLAYTON) 01 April 1975 (01-04-75), see whole document.	1-5
A	US 3,972,469 A (WRIGHT) 03 August 1976 (03-08-76), see whole document.	1-5
A	US 4,531,632 A (WEBER) 30 July 1985 (30-07-85), see whole document.	1-5
A	US 4,965,115 A (CIMILLO) 23 October 1990 (23-10-90), see whole document.	1-5
A, P	US 6,276,029 B1 (BUETTELL) 21 August 2001 (21-08-01), see whole document.	1-5

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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